

REMARKS

This Amendment is being submitted with a Request For Continued Examination (RCE) and a Petition for Extension of Time (1 month). In the prior application, claims 25, 26 and 28-45 were pending. Claims 25, 26 and 28 were rejected under 35 U.S.C. §102 as anticipated by JP 5-314824 (JP '824). Claims 29-32 and 34 were also rejected under 35 U.S.C. §103 as being unpatentable over JP '824 in view of Hake, U.S. Patent No. 5,861,578. Claim 33 was also rejected under 35 U.S.C. §103 as unpatentable over JP '824 in view of Hols, U.S. Patent No. 6,071,551.

By this Amendment, Applicants have cancelled the pending claims and presented new claims 46-64 for consideration. New independent claims 46 and 56 are similar to previous independent claims 25 and 36, but different in several respects. Specifically, each claim requires at least three multi-layer laminate films which none of the prior art references disclose, teach or suggest. Applicants therefore submit that the present claims are allowable over the art of record.

The Examiner is invited to telephone the Applicants' undersigned attorney at (248) 223-9500 for clarification or if any unresolved matters remain.

Respectfully Submitted,

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VERSION WITH MARKINGS TO SHOWING CHANGES MADEIn The Claims:

Please cancel claims 25, 26 and 28-45.

Please add new claims 46-64 to appear as follows:

46. (New) A halogen-free composite film comprising at least 3 to N sealable, multi-layered laminated films, wherein N is an integer from 4 to 10, each multi-layered laminated film comprising a first film, a second film and a laminating adhesive or lacquer between the first and second films, said composite film sealingly engaging one side of a functional element.

47. (New) A composite film according to claim 46 wherein the functional element is a printed circuit board, a sensor, a metallic stranded wire, a metallic conductor material, or an electronic component.

48. (New) A composite film according to claim 46 wherein each of the sealable, multi-layered laminated films are identical to one another.

49. (New) A composite film according to claim 46 wherein the second film of each laminated film comprises a thermally activated substance.

50. (New) A composite film according to claim 46 wherein the first and the second film of each laminated film is selected from the group consisting of: liquid crystal polymer, polyphenylene sulfide, polyethylene terephthalate, polyethylene naphthalate, polyketone, polyetherketone, polyetheretherketone, polyetherketone-ketone, polyetheretherketoneketone, polyetherimide, polyether sul-fone, polysulfone, cyclo-olefin copolymer, and polyamide films.

51. (New) A composite film according to claim 46 wherein the laminating adhesive or lacquer is selected from the group consisting of: acrylates, polyurethanes, polyester polyols, polyester urethanes, epoxides, copolyesters or natural adhesive resins, which can be used as single-component or multi-component systems.

52. (New) A composite film according to claim 50 wherein the laminating adhesive or lacquer is selected from the group consisting of: acrylates, polyurethanes, polyester polyols, polyester urethanes, epoxides, copolyesters or natural adhesive resins, which can be used as single-component or multi-component systems.

53. (New) A composite film according to claim 46 wherein the wet application weight of the laminating adhesive is 2 g/m² to 40 g/m².

54. (New) A composite film according to claim 49 wherein the thermally activated substance is selected from the group consisting of: cyclo-olefin copolymers, polyesters, polyurethanes, acrylates and derivates thereof, vinyl acetate copolymers, polyvinyl alcohols, polyvinyl butyral, polyvinyl acetates, sealable maleic resins, alkyd resins, polyolefins, polyamides and saturated, unsaturated, linear and branched copolyesters or multi-component polyurethane primer systems.

55. (New) A composite film according to claim 46 wherein the first and second films of the individual laminated films each have a thickness between 10 µm and 100 µm.

56. (New) A method for manufacturing a halogen-free composite film having at least 3 to N sealable, multi-layered laminated films, wherein N is an integer from 4 to 10, the method comprising:

producing each multi-layered laminated film by applying a laminating adhesive to a first film;

thereafter drying the first film in a drying tunnel at temperatures from approximately 80° C to 180° C;

joining a second film at the end of the drying tunnel to the first film;
and

curing said laminating adhesive of said first film; and
thereafter providing a functional element between two of said at least 3 to N sealable, multi-layered laminated films; and

laminating said two multi-layered laminated films together to sealingly engage said functional element.

57. (New) A method according to claim 56 further comprising coating the second film with a thermally activated substance.

58. (New) A method according to claim 56 wherein the first and the second film of each laminated film is selected from the group consisting of: liquid crystal polymer, polyphenylene sulfide, polyethylene terephthalate, polyethylene naphthalate, polyketone, polyetherketone, polyetheretherketone, polyetherketone-ketone, polyetheretherketoneketone, polyetherimide, polyether sulfone, polysulfone, cyclo-olefin copolymer, and polyamide films.

59. (New) A method according to claim 56 wherein the laminating adhesive is selected from the group consisting of: acrylates, polyurethanes, polyester polyols, polyester urethanes, epoxides, copolyesters or natural adhesive resins, which are used as single-component or multi-component systems.

60. (New) A method according to claim 56 wherein the laminating adhesive is applied wet and the wet application weight of the laminating adhesive is 2 g/m² to 40 g/m².

61. (New) A method according to claim 57 wherein the thermally activated substance is selected from the group consisting of: cyclo-olefin copolymers, polyesters, polyurethanes, acrylates and their derivates, vinyl acetate copolymers, polyvinyl alcohols, polyvinyl butyral, polyvinyl acetates, sealable maleic resins, alkyd resins, polyolefins, polyamides and saturated, unsaturated, linear and branched copolyesters or multi-component polyurethane primer systems.

62. (New) A method according to claim 56 wherein the first and second films of the individual laminated films each have a thickness between 10 µm and 100 µm.

63. (New) A method according to claim 56 wherein said functional element is an electrically conductive layer, and comprising vacuum depositing a metal layer between the first and second films.

64. (New) A method according to claim 63 wherein the vacuum deposited metal layer is copper or aluminum.

In The Abstract:

On page 23 of the English language translation of the German PCT Application, please amend the abstract to appear as follows:

The invention relates to a halogen-free composite film [consisting of] including at least [one] three to N sealable, multi-layered [laminated] composite film(s), wherein N is an integer from [2] 4 to 10, and in which a functional layer and/or a functional element is [present] interposed between the individual [laminated] composite films. In addition, the invention relates to a [process] method for manufacturing the halogen-free composite film and its use as a flexible, multi-purpose material.